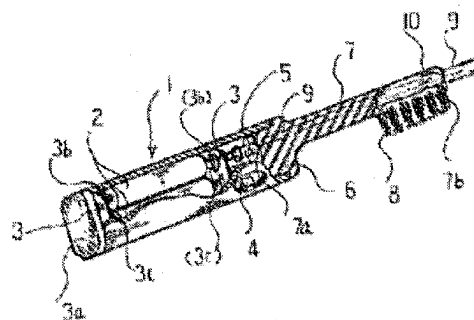


TOOTHBRUSH WITH ILLUMINATION**Publication number:** JP2003047528**Publication date:** 2003-02-18**Inventor:** KASHIWAKURA EIJI**Applicant:** FUJI BELLOWS CO LTD**Classification:****- international:** A46B15/00; A61C17/00; A46B15/00; A61C17/00; (IPC1-7): A46B15/00; A61C17/00**- European:****Application number:** JP20010271054 20010803**Priority number(s):** JP20010271054 20010803**Report a data error here****Abstract of JP2003047528**

PROBLEM TO BE SOLVED: To provide a tooth polishing brush which is provided with illumination for observing all the corners in the mouth after tooth polishing using the tooth polishing brush at the front end of the tooth polishing brush and contains electronic within a handle. **SOLUTION:** Dry cells 2, electrodes 3, a power switch 4 and a light emitting diode 5 are respectively wired in a cell box 1 commonly used as a handle and are installed inside the cell box 1. The light emitting diode 5 is opposed to a flank 7a of a rod 7 of the toothbrush joining to an aperture 6 of the cell box 1 and is disposed in proximity to bristles 8 to be implanted to the head 7b of the rod 7 of the toothbrush. The rod 7 is made of a material, such as an acrylic resin, through which the irradiated light 9 of the light emitting diode 5 is transmitted.

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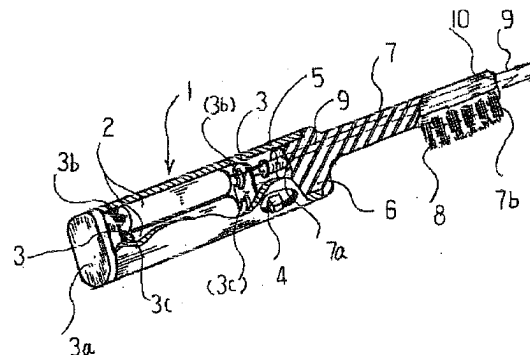
Fターム(参考) 3B202 AA06 GA02

(54) 【発明の名称】 照明付歯ブラシ

(57) 【要約】

【課題】 歯みがきブラシを使って歯みがき後に口の内部のすみずみの観察を行うための照明を歯みがきブラシの先端に設け、電子部品は把手に内蔵した歯みがきブラシにする。

【解決の手段】 把手と兼用にした電池ボックス1に乾電池2と電極3と電源スイッチ4と発光ダイオード5とを夫々配線して、電池ボックス1に内設し、前記発光ダイオード5を電池ボックス1の開口部6に接合する歯ブラシの中棒7の側面7aに対向させ、歯ブラシの中棒7のヘッド部7bに植え付けるブラシ8に近接して、発光ダイオード5の照射光9が透過するアクリル樹脂などの中棒7の材質にした構成からなる。



【特許請求の範囲】

【請求項1】 把手と兼用にした電池ボックス(1)に乾電池(2)と電極(3)と電源スイッチ(4)と発光ダイオード(5)とを夫々配線して内設し、前記発光ダイオード(5)を電池ボックス(1)の開口部(6)に接合する歯ブラシの中棒(7)の側面(7a)に対向させ、歯ブラシの中棒(7)のヘッド部(7b)に植え付けるブラシ(8)に近接して発光ダイオード(5)の照射光(9)が透過するアクリル樹脂などの材質からなる中棒(7)にしたことを特徴とする照明付歯ブラシ。

【請求項2】 上記する発光ダイオード(5)の照射光(9)を通過する中棒(7')の材質を特定せず、この中棒(7')に並列して密着するアクリル樹脂などの透過材質からなる細長い導光体(7c)を設け、その導光体(7c)の端子側面(7d)に発光ダイオード(5)を対向させ他方の端子側面(7d')を中棒(7')のヘッド部(7b')に配置したことを特徴とする請求項1記載の照明付歯ブラシ。

【請求項3】 把手と兼用にした電池ボックス(1)に乾電池(2)と電極(3)と電源スイッチ(4)を内設し、発光ダイオード(5)はリード線(12)で前記する乾電池(2)と電極(3)と電源スイッチ(4)の夫々に配線し電池ボックス(1)の開口部(6)に接合する歯ブラシの中棒(7')の側面(7a')から長手方向でヘッド部(7b')の最端子に至って孔(11)を開口し、その孔(11)にリード線(12)を通し、発光ダイオード(5)を中棒(7')のヘッド部(7b')に設けたことを特徴とする照明付歯ブラシ。

【請求項4】 上記する中棒(7')に孔(11)を開口せず、この孔なし中棒(7'')に並列して密着する細長いパイプ(13)をヘッド部(7b'')の最端子に至って設け、そのパイプ(13)の孔(11')にリード線(12)を通し、発光ダイオード(5)を中棒(7'')のヘッド部(7b'')に設けたことを特徴とする請求項3記載の照明付歯ブラシ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 この発明は、歯みがきに使う歯ブラシに関する。詳しくは、歯ブラシに照明を付加した歯ブラシに関する。

【0002】

【従来の技術】 此の種の従来技術として把手とその先に中棒を中継してヘッド部にブラシを植え付けた歯ブラシが一般的である。

【0003】 即ち、歯をブラシで磨いた後は口の中を水などでゆすいだりうがいなどし終了となるのが一般的で、まれに歯の健康を気にする人は、口を大きくあけて、口の中を覗くが、照明の関係で歯科医などの専門医以外は口の中のすみずみまで照明が届かぬことと視界の関係で覗くことが出来ないのが一般的である。

【0004】

【発明が解決しようとする課題】 上記する従来技術では、朝晩の歯みがきに事務的に数分間歯みがき作業をして歯の健康状態や口の中のすみずみまでの観察するのに口をいっぱい大きく開いて洗面所の照明の届く範囲でしか観察出来ないことで歯のすみずみ、特に奥歯などは照明が届かない為自己管理が出来ないという課題がある。

【0005】 また、永久歯の生え揃わない乳歯の生え始め頃の幼児の場合は付き添え者が幼児の口の中に歯ブラシを入れて歯をみがいてやらなければならない時期では、幼児の口の中の観察は、暗いことで見えないばかりでなく、口の開きが小さく開きが自由にならず、すみずみまで覗き込んで観察することが出来ないことで、思わず柔らかな歯ぐきや、口の内部に支障をきたすなどの課題がある。

【0006】 このように歯みがきに口の内部をすみずみまで観察するために照明付の歯ブラシが強く要望されていた。

【0007】

【課題を解決するための手段】 本発明は、上記の欠点ともなる課題を解決するため、図1で述べるように、把手と兼用した電池ボックス1と乾電池2と電極3と電源スイッチ4と発光ダイオード5との夫々を配線して電池ボックス1の空間に収納し、此の電池ボックスの開口部6に接合する歯ブラシの中棒7の側面7aに発光ダイオード5を対向させ、歯ブラシの中棒7のヘッド部7bに植え付けるブラシ8に近接して発光ダイオード5の照射光9が透過するアクリル樹脂材等の材質にすることで、中棒7の側面7aから入った発光ダイオード5の照射光9をヘッド部7bの先端10が光ることで口の内部を照明して観察の出来る構成である。

【0008】 更には、発光ダイオード5の照射光9をヘッド部7bの先端10から発光させるために図3で示すように、発光ダイオード5を先端10にリード線12を使って中棒7'の孔11を通して設けることで、ヘッド部7b'の先端10が光ることで口の内部を照明可能にして観察の出来る構成にしている。

【0009】

【発明の実施の形態】 以下に本発明を図示に基づいて更に詳しく説明する。即ち、図1は本発明での第1実施例の一部断面での全体を示す斜視図でグリップするための把手を成形品加工で電池ボックス1と共用し、その電池ボックス1は両サイドが開いた筒体状で片方の端子は電極3の設けた筒体孔から着脱の出来る底蓋3aで構成している。

【0010】 そして、これらの乾電池2の底蓋3aの反対側での電極3には本実施例ではコイルバネ3bを2個基板体3cにカシメられ、更にその基板体3cに電源スイッチ4と発光ダイオード5の2本の脚が固定されて、

夫々の電子部品が基板体3cのプリント面で配線される。

【0011】これらの電池ボックス1の開口部6にはそれに接合する中棒7の側面7aに対向して発光ダイオード5が位置して配設され発光ダイオード5の照射光9が中棒7の長手方向に向けて透過してブラシ8の植え付けられるヘッド部7bの端子の側面から外部に向けて照明を可能にするが、ここで中棒7は照射光9を透過するためには、中棒7の材質を透明合成樹脂材の透過性の良いアクリル樹脂を実施例では採用するが他の透過性の樹脂材で衛生面での支障のきたさない材質が採用されてもよい。

【0012】次に、第2実施例を図2で示すが、これは上記する発光ダイオード5を中棒7の側面7aから照射しその照射光9をヘッド部7bの先端に透過させているのに対して、この中棒7を材質を一般的なABS樹脂などの着色材、不透明材での中棒7'にしたもので発光ダイオード5の対向面に中棒7と別物での光を通す導光体7cを中棒7'に並列して長手方向に結合して構成している。

【0013】これらの中棒7'と並列する透過性の透明合成樹脂材のアクリル樹脂を実施例では採用し、中棒7'と二重成形などの加工方で中棒7'のヘッド部7b'の先端10まで延長している。これらの導光体7cの端子側面7dに発光ダイオード5を対向させてエッジライト式での照射光9で口の内部のすみずみまで照明することの出来る構成である。

【0014】次に第3の実施例での照明方法と構成を図3で示すが、これらの照明は、上述する発光ダイオード5の照明をエッジライト式であるのに対して、本実施例の第3では中棒7"の中を開口して孔11を設けて、これらの孔11を基板体3cにハンダ付けした発光ダイオード5の2本の脚に配線するためのリード線12を通して、このリード線の端子がヘッド部7b"の先端10まで通過する孔11に設けた発光ダイオード5とハンダ付けによって接続されている。

【0015】このように発光ダイオード5をヘッド部7b"の先端10に設定してその先端10から直接的に照射光9をブラシ8と同時に口の内部に入れてすみずみまで照明の出来る構成である。

【0016】次に第4の実施例を図4で述べるに、上記する発光ダイオード5は中棒7"の中を長手方向に開口する孔11を通過することなく、即ち中棒7'はムク状態で孔を設けず、これらの中棒7'に並列して長手方向に延長するパイプ体13を中棒7'に抱き合わせることで、そのパイプ体13の中をリード線12

を通して、このリード線の端子がヘッド部7b'の先端10まで通過する孔11'に設けた発光ダイオード5の夫々の脚とハンダ付けされて接続されている。

【0017】このようにして、全て第1実施例から第4実施例に至るまで乾電池2を使って電池ボックス1に露出する電源スイッチ4のON、OFFのスイッチング操作によって発光ダイオード5が照明を可能にしており、夫々の照射光9はブラシ8を同時に歯みがき状態で口の中にいれられることで口の中のすみずみに照明が可能で歯の状態や口の中を観察出来る。

【0018】

【発明の効果】本発明は、上述の通り構成作用するので次の優れた効果を奏する。即ち、歯みがき状態で口の中に歯ブラシを入れたままで口の中のすみずみに照明をあてることで暗がりでも良く口の中を観察出来ること歯の健康管理や口内の管理の出来る照明付歯ブラシを提供することが出来る。

【図面の簡単な説明】

【図1】 本発明に係わる、第1実施例での一部断面での全体斜視図である。

【図2】 本発明に係わる第2実施例での一部断面での全体斜視図である。

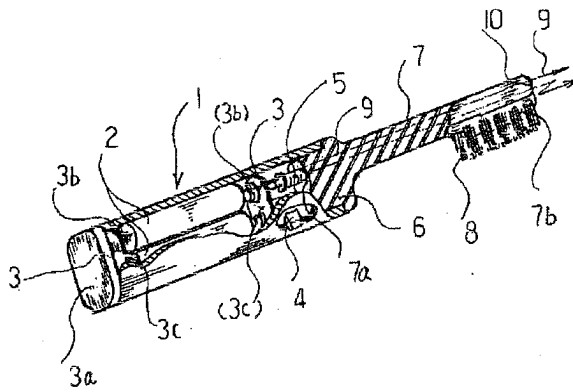
【図3】 本発明に係わる第3実施例での一部断面での全体斜視図である。

【図4】 本発明に係わる第4実施例での一部断面での全体斜視図である。

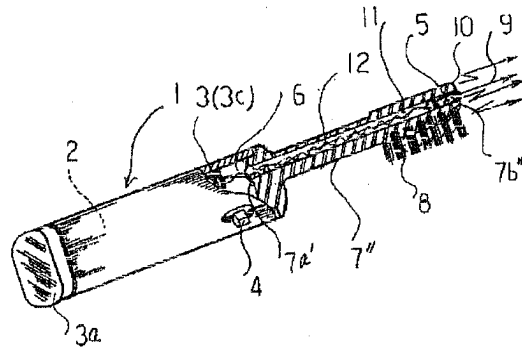
【符号の説明】

1. 電池ボックス
2. 乾電池
3. 電極
- 3a. 底蓋
- 3b. コイルバネ
4. 電源スイッチ
5. 発光ダイオード
6. 開口部
7. 7' 7'' . 中棒
- 7a. 7a' . 側面
- 7b. 7b' . 7b'' . 7b''' . ヘッド部
- 7c. 導光体
- 7d. 7d' . 端子側面
8. ブラシ
9. 照射光
10. 先端
11. 11' 孔
12. リード線
13. パイプ

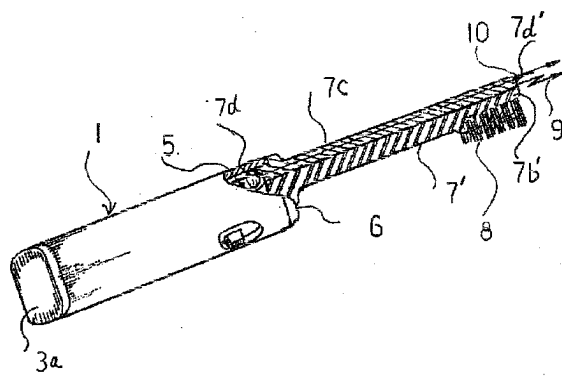
【図1】



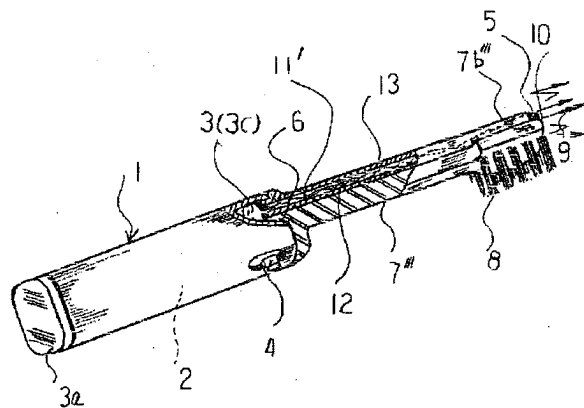
【図3】



【図2】



【図4】



PATENT ABSTRACTS OF JAPAN

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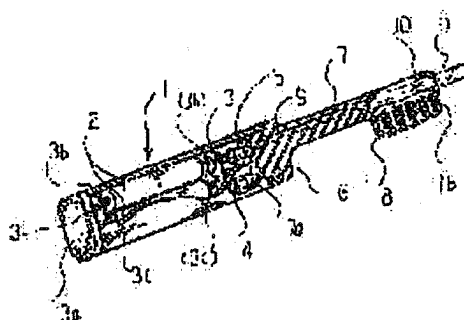
(72)Inventor : KASHIWAKURA EIJI

(54) TOOTHBRUSH WITH ILLUMINATION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a tooth polishing brush which is provided with illumination for observing all the corners in the mouth after tooth polishing using the tooth polishing brush at the front end of the tooth polishing brush and contains electronic within a handle.

SOLUTION: Dry cells 2, electrodes 3, a power switch 4 and a light emitting diode 5 are respectively wired in a cell box 1 commonly used as a handle and are installed inside the cell box 1. The light emitting diode 5 is opposed to a flank 7a of a rod 7 of the toothbrush joining to an aperture 6 of the cell box 1 and is disposed in proximity to bristles 8 to be implanted to the head 7b of the rod 7 of the toothbrush. The rod 7 is made of a material, such as an acrylic resin, through which the irradiated light 9 of the light emitting diode 5 is transmitted.



LEGAL STATUS

[Date of request for examination]

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[Patent number]

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CLAIMS

[Claim(s)]

[Claim 1] Wire the cell box (1) used as the handle at combination, respectively, and a dry cell (2), an electrode (3), and an electric power switch (4) and light emitting diode (5) are installed inside it. The side face (7a) of the inside rod (7) of the gear-tooth brush which joins said light emitting diode (5) to opening (6) of a cell box (1) is made to counter. The gear-tooth brush with lighting characterized by making it a rod (7) while consisting of the quality of the material of the acrylic resin which approaches the brush (8) planted in the head section (7b) of the inside rod (7) of a gear-tooth brush, and the exposure light (9) of light emitting diode (5) penetrates.

[Claim 2] While passing the exposure light (9) of the light emitting diode (5) described above, the quality of the material of a rod (7') is not specified. The long and slender transparent material (7c) which consists of the transparency quality of the materials, such as acrylic resin arranged in parallel and stuck to an inside [this] rod (7'), is prepared. The gear-tooth brush with lighting according to claim 1 characterized by having made light emitting diode (5) counter the terminal side face (7d) of the transparent material (7c), and having arranged the other-end child side face (7d') in the head section (7b') of an inside rod (7').

[Claim 3] A dry cell (2), an electrode (3), and an electric power switch (4) are installed inside the cell box (1) used as the handle at combination. Light emitting diode (5) carries out opening of the hole (11) to the endmost part child of the head section (7b'') very much by the longitudinal direction from the side face (7a') of the inside rod (7'') of the gear-tooth brush which wires each of the dry cell (2), electrode (3), and electric power switch (4) which are described above with lead wire (12), and is joined to opening (6) of a cell box (1). The gear-tooth brush with lighting characterized by having formed lead wire (12) in the hole (11), and forming through and light emitting diode (5) in the head section (7b'') of an inside rod (7'').

[Claim 4] The long and slender pipe (13) arranged in parallel and stuck to the rod in nothing (7''') is prepared very much for the endmost part child of the head section (7b'''). a rod (7'') while describing above — a hole (11) — opening — not carrying out — this hole — The gear-tooth brush with lighting according to claim 3 characterized by having formed lead wire (12) in the hole (11) of the pipe (13), and forming through and light emitting diode (5) in the head section (7b''') of an inside rod (7''').

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the gear-tooth brush used for dentifrice. In detail, it is related with the gear-tooth brush which added lighting to the gear-tooth brush.

[0002]

[Description of the Prior Art] A handle and its gear-tooth brush which relayed the inside rod previously and planted the brush in the head section are common as this kind of a conventional technique.

[0003] That is, although the inside of opening is rinsed with water etc., or those to whom that gargling etc. is carried out and it is ended cares about dental health generally and rarely open opening greatly and it looks in at opening after brushing its teeth with a brush, it is common that it cannot look into by the relation between that lighting does not arrive to all the corners in opening due to lighting other than specialists, such as dentist, and a field of view.

[0004]

[Problem(s) to be Solved by the Invention] With the conventional technique described above, since lighting does not arrive, dental all the corners, especially a molar, etc. have the technical problem that self-control is impossible, because it is observable only in the range in which opening is opened greatly to the limit although a dentifrice activity is done for several minutes in a businesslike manner at the time of dentifrice of the morning and evening and being observed to dental health condition or all the corners in opening, and the lighting of a washroom reaches it. [0005] moreover, with the stage when the milk teeth which a permanent tooth grows and do not gather begin to grow, it can escort in the case of the small child at the time, a person has to put in a gear-tooth brush into infantile opening, and their teeth must be brushed An aperture does not become [the aperture of opening] small freely, but the observation in infantile opening is being unable to look in and observe to all the corners, and it is not not only visible by the dark thing, but it has technical problems, such as causing trouble involuntarily to the soft gum and the interior of opening.

[0006] Thus, in order to observe the interior of opening to all the corners at the time of dentifrice, the gear-tooth brush with lighting was demanded strongly.

[0007]

[Means for Solving the Problem] In order that the above-mentioned fault may solve a technical problem, this invention so that drawing 1 may describe Wire and each of the cell box 1, the dry cell 2, the electrode 3, the electric power switch 4, and light emitting diode 5 which were used also [handle] is contained to the space of the cell box 1. Light emitting diode 5 is made to counter side-face 7a of the inside rod 7 of the gear-tooth brush joined to the opening 6 of this cell box. By making it the quality of the materials, such as acrylic resin material which approaches the brush 8 planted in head section 7b of the inside rod 7 of a gear-tooth brush, and the exposure light 9 of light emitting diode 5 penetrates It is the configuration whose observation illuminates the interior of opening because the tip 10 of head section 7b shines the exposure light 9 of light emitting diode 5 which entered from side-face 7a of the inside rod 7, and is possible.

[0008] Furthermore, in order to make the exposure light 9 of light emitting diode 5 emit light from

the tip 10 of head section 7b, as drawing 3 shows, it is made the configuration whose observation enables lighting of the interior of opening because the tip 10 of head section 7b" shines, and is possible by forming light emitting diode 5 at a tip 10 through the hole 11 of inside rod 7" using lead wire 12.

[0009]

[Embodiment of the Invention] This invention is explained in more detail based on illustration below. That is, drawing 1 shares with the cell box 1 the handle for gripping with the perspective view of the 1st example in this invention showing the whole cross section in part by mold-goods processing, and the cell box 1 consists of base lid 3a whose attachment and detachment are possible at the shape of a barrel in which both sides carried out opening from the barrel hole with which the electrode 3 prepared terminal of one of the two.

[0010] And by this example, an electric power switch 4 and two feet of light emitting diode 5 are fixed to the electrode 3 in the opposite side of base lid 3a of these dry cells 2 by two-piece substrate object 3c in coil-spring 3b at caulking ** and also substrate object 3c of those, and each electronic parts are wired in respect of the print of substrate object 3c.

[0011] While joining to the opening 6 of these cell boxes 1 at it, side-face 7a of a rod 7 is countered. Although lighting is made possible towards the exterior from the side face of the terminal of head section 7b in which light emitting diode 5 is located, and is arranged, the exposure light 9 of light emitting diode 5 penetrates towards the longitudinal direction of the inside rod 7, and a brush 8 is planted In order for the inside rod 7 to penetrate the exposure light 9, the quality of the material which the trouble in a health side does not cause the quality of the material of the inside rod 7 by other penetrable resin material although the penetrable good acrylic resin of lucite material is adopted in the example may be adopted here.

[0012] Next, although drawing 2 shows the 2nd example As opposed to this irradiating the light emitting diode 5 described above from side-face 7a of the inside rod 7, and making the exposure light 9 penetrate at the tip of head section 7b Transparent material 7c which is what made the quality of the material inside rod 7in coloring matter [such as common ABS plastics,] and opacity material' for the inside [this] rod 7, and lets the light in the inside rod 7 and a different thing pass to the opposed face of light emitting diode 5 is arranged in parallel in inside rod 7', and it combines with a longitudinal direction and constitutes.

[0013] In the example, it adopted, and it is methods of processing, such as inside rod 7' and duplex shaping, and the acrylic resin of inside rod of these 7' and the penetrable lucite material arranged in parallel is extended to the tip 10 of head section 7b' of inside rod 7'. It is the configuration which a light emitting diode 5 can be made to be able to counter 7d of terminal side faces of such transparent material 7c, and can be illuminated to all the corners inside opening with the exposure light 9 in an edge light type.

[0014] Next, although drawing 3 shows the 3rd lighting and configuration in an example As opposed to these lighting being edge light types about the lighting of the light emitting diode 5 mentioned above In the 3rd of this example, carry out opening of the inside of inside rod 7", form a hole 11, and it lets the lead wire 12 for wiring two feet of the light emitting diode 5 which soldered these holes 11 to substrate object 3c pass. The terminal of this lead wire is connected by the light emitting diode 5 and soldering which were prepared in the hole 11 passed to the tip 10 of head section 7b."

[0015] Thus, it is the configuration by which sets up light emitting diode 5 at the tip 10 of head section 7b", and puts the exposure light 9 into the interior of opening, and it is made directly from the tip 10 as for lighting to a brush 8 and coincidence to all the corners.

[0016] Next, the light emitting diode 5 which describes the 4th example above for drawing 4 to describe, without passing the hole 11 which carries out opening of the inside of inside rod 7" to a longitudinal direction It is assorting to ". namely, the inside rod 7 — "" — the Aphananthe aspera condition — a hole — not preparing — the inside rod 7 of these — the pipe object 13 which arranges in parallel in "" and is extended to a longitudinal direction — the inside rod 7 — the inside of that pipe object 13 — lead wire 12 — letting it pass — the terminal of this lead wire — head section 7b' — it is soldered with each foot of the light emitting diode 5 formed in 'the hole 11 passed to the tip 10 of ", and connects.

[0017] Thus, by switching actuation of ON.OFF of the electric power switch 4 expose to the cell

box 1 using a dry cell 2, the light emitting diode 5 make lighting possible, each exposure light 9 can be illuminate in all the corners in opening by a brush 8 being put in by coincidence into opening in the state of dentifrice, and observation can do the inside of a dental condition or opening until it result [from the 1st example] in the 4th example altogether.

[0018]

[Effect of the Invention] Since this invention carries out a configuration operation as above-mentioned, it does so the effectiveness which was excellent in the degree. That is, the gear-tooth brush with lighting which darkness is sufficient as by hitting lighting against all the corners in opening, putting in a gear-tooth brush into opening in the state of dentifrice, and can perform the health care of an observable [the inside of opening] gear tooth and management in opening can be offered.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the gear-tooth brush used for dentifrice. In detail, it is related with the gear-tooth brush which added lighting to the gear-tooth brush.

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PRIOR ART

[Description of the Prior Art] A handle and its gear-tooth brush which relayed the inside rod previously and planted the brush in the head section are common as this kind of a conventional technique.

[0003] That is, although the inside of opening is rinsed with water etc., or those to whom that gargling etc. is carried out and it is ended cares about dental health generally and rarely open opening greatly and it looks in at opening after brushing its teeth with a brush, it is common that it cannot look into by the relation between that lighting does not arrive to all the corners in opening due to lighting other than specialists, such as dentist, and a field of view.

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EFFECT OF THE INVENTION

[Effect of the Invention] Since this invention carries out a configuration operation as above-mentioned, it does so the effectiveness which was excellent in the degree. That is, the gear-tooth brush with lighting which darkness is sufficient as by hitting lighting against all the corners in opening, putting in a gear-tooth brush into opening in the state of dentifrice, and can perform the health care of an observable [the inside of opening] gear tooth and management in opening can be offered.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] With the conventional technique described above, since lighting does not arrive, dental all the corners, especially a molar, etc. have the technical problem that self-control is impossible, because it is observable only in the range in which opening is opened greatly to the limit although a dentifrice activity is done for several minutes in a businesslike manner at the time of dentifrice of the morning and evening and being observed to dental health condition or all the corners in opening, and the lighting of a washroom reaches it. [0005] moreover, with the stage when the milk teeth which a permanent tooth grows and do not gather begin to grow, it can escort in the case of the small child at the time, a person has to put in a gear-tooth brush into infantile opening, and their teeth must be brushed An aperture does not become [the aperture of opening] small freely, but the observation in infantile opening is being unable to look in and observe to all the corners, and it is not not only visible by the dark thing, but it has technical problems, such as causing trouble involuntarily to the soft gum and the interior of opening.

[0006] Thus, in order to observe the interior of opening to all the corners at the time of dentifrice, the gear-tooth brush with lighting was demanded strongly.

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MEANS

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] the 1st example concerning this invention — it is the whole cross-section perspective view a part.

[Drawing 2] the 2nd example concerning this invention — it is the whole cross-section perspective view a part.

[Drawing 3] the 3rd example concerning this invention — it is the whole cross-section perspective view a part.

[Drawing 4] the 4th example concerning this invention — it is the whole cross-section perspective view a part.

[Description of Notations]

1. Cell Box
2. Dry Cell
3. Electrode
- 3a. Base lid
- 3b. Coil spring
4. Electric Power Switch
5. Light Emitting Diode
6. Opening
- 7.7'7". Inside rod
- 7a.7a'. Side face
- 7b.7b'.7b''.7b'''. Head section
- 7c. Transparent material
- 7d.7d'. Terminal side face
8. Brush
9. Exposure Light
10. Tip
- 11.11' Hole
12. Lead Wire
13. Pipe

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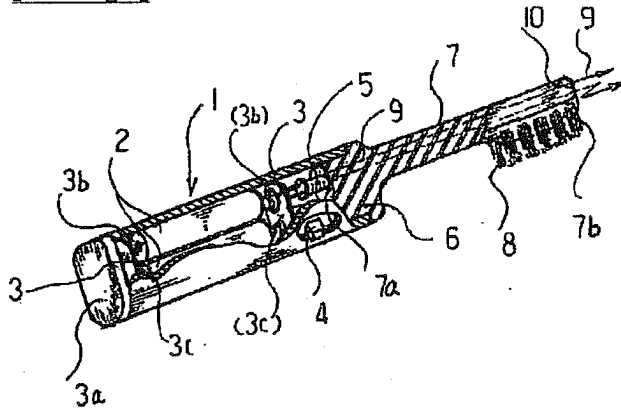
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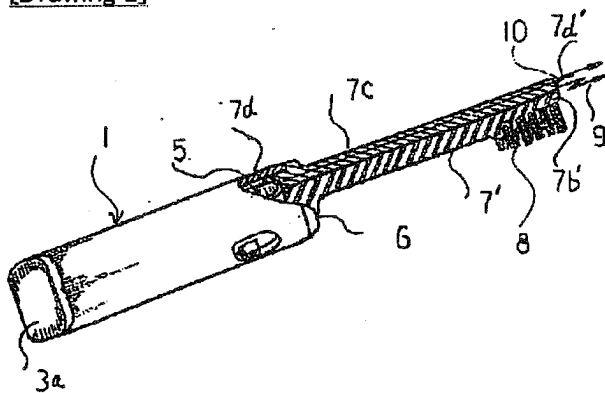
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DRAWINGS

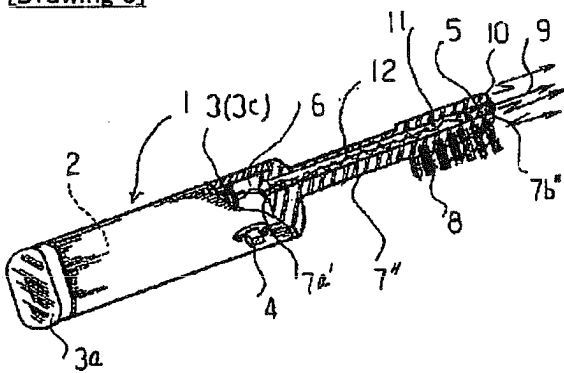
[Drawing 1]



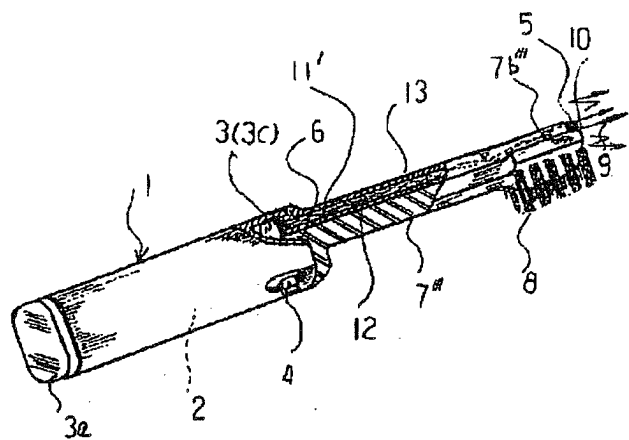
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]